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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/750,636 | 12/19/2003 | Ray Hebert | NAK-130B/US | 9907 |

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| EXAMINER | |
|---|---|
| AKANBI, ISIAKA O | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2877 | |

DATE MAILED: 03/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/750,636 | HEBERT ET AL. | |
| | Examiner | Art Unit | |
| | Isiaka O. Akanbi | 2877 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *19 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *19 December 2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Information Disclosure Statement*

The information disclosure statement file 19 December 2003 has been entered and reference considered by the examiner.

### *Drawings*

The examiner approves the drawings filed 19 December 2003.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5-8,10-11,13, 17 and 26-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Brill et al. (2006/0001883).

As regard to claim 1, Brill discloses a method/apparatus for characterizing optical properties of sample, comprising:

a) a light source (102) generating a broadband beam (B);

b) at least first set of components (512/508) defining a first light path (IC), said components including least a first component pair of a planar mirror (512) and a parabolic mirror (508) with a first focal length and a second component pair of a planar mirror (514) and parabolic mirror (510) with a second focal length, wherein said broadband beam illuminates said planar mirror (512) and said parabolic mirror (508) in said first component pair and said planar mirror (514) and said parabolic mirror (510) in said second component pair at angles substantially near normal to said planar mirror and said parabolic mirror said first component pair and said planar mirror and said parabolic mirror in said second component pair (fig. 4); and

c) an element (S) onto which said broadband beam (B) is illuminated, wherein said broadband beam illuminates said element at angles substantially near normal to said element (fig. 4).

As to claim 2, according to claim 1, Brill discloses wherein said planar mirror (512) and said parabolic mirror (508) said first component pair are positioned such that said broadband beam exiting said first component pair is collimated.

As to claim 3, Brill discloses wherein said planar mirror (514) and said parabolic mirror (510) said second component pair are positioned such that said broadband beam entering said second component pair collimated (figs. 4 and 7).

As to claim 7, the reference of Brill discloses everything claimed, as applied to claim 1 above, further the reference of Brill in another embodiment (fig. 5) discloses wherein said first set of components further comprises a polarizing means (620) to function as polarizing element.

As to claims 8 and 27, Brill discloses wherein said polarizing means (620) polarizes said broadband beam in one of two orthogonal directions (figs. 5, 7and 8).

As to claim 10, Brill discloses wherein said element is selected from the group consisting of a sample (S) and first detector (104/604)(figs. 4 and 5).

As to claim 11, Brill discloses further a polarizing means (621/822) in said first detector (figs. 5 and 7).

As to claim 13, Brill discloses wherein said first detector is a spectroscopic ellipsometer (page 3, par. 0049).

As to claim 17, Brill discloses a second set of components (510,514) defining a second light path, wherein said element is a first detector (104).

As regard to claim 26, Brill discloses method of characterizing optical properties sample comprising the steps of:

a) providing a sample (S) be characterized, b) generating light in a broadband beam (B), c) magnifying and illuminating said broadband beam onto a top surface of said sample (S) in a first set of reflective components (612/608) defining a first light path (IC), wherein changes in polarization of said broadband beam are minimized by ensuring that said broadband beam illuminates said reflective components (612/608) in said first light path (IC) and said sample at angles substantially near normal to said reflective components and said sample (fig. 4 and 5), d)

magnifying and illuminating said broadband beam (B') reflected from said top surface of said sample (S) to a first detector (605) a second set of reflective components (610/616) defining a second light path (B') , wherein changes polarization of said broadband beam are minimized by ensuring that said broadband beam illuminates said reflective components in said second light path and said sample at angles substantially near normal said reflective components and said sample, e) measuring an intensity of said broadband beam reflected from said top surface of said sample with said first detector and f) determining optical properties of said sample based on said intensity of said broadband beam reflected from said top surface of said sample (page 1, par. 0002) (page 3, par. 0040).

As to claim 28, Brill discloses the step of focusing said broadband beam illuminating said top surface (S) of said sample in said first light path (fig. 4).

As to claim 29, Brill discloses the step of focusing said broadband beam (B') reflected from said top surface of said sample (S) said second light path (fig. 4).

## *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4-5, 9, 12, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brill et al. (2006/0001883), as applied to claim 1, in view of the examiner Official Notice.

As to claims 4 and 5, the reference of Brill is silent with regard to said planar mirror and said parabolic mirror in said first component pair as been each coated with a reflective coating such as a metallic coating of aluminum for reflecting. The examiner wishes to take Official Notice of the fact that the use of aluminum coating for reflectivity would have been well known. It would have been obvious to one having ordinary skill in the art at the time of invention to use planar mirror and parabolic mirror in said first component pair with each having an aluminum

coating for the purpose of enhancing reflectivity, since these are well known aluminum coated mirror used advantages.

As to claims 9, 12, 23 and 30, the reference of Brill is silent with regard to said polarizing means further comprising a rotatable polarization analyzer (621)(fig. 5). The examiner wishes to take Official Notice of the fact that a polarizing means comprising a rotatable polarization analyzer for ellipsometer would have been well known. It would have been obvious to one having ordinary skill in the art at the time of invention to provide a polarizing means comprising a rotatable polarization analyzer for the purpose of rotating a beam (i.e. a P-polarized light beam is rotated to be an S-polarized light beam after propagating through a rotatable polarizing means (adjusting)), since these are well known rotating polarizer analyzer used advantages.

As to claim 25, the reference of Brill and Brierley is silent with regard to a fiber for redirecting said broadband beam. The examiner wishes to take Official Notice of the fact that the use of a fiber for redirecting/transmitting/emitting of broadband beam would have been well known as evident by Piwonka-Corle et al. (5,608,526). Further the reference of Norton discloses the use of fiber to redirecting broadband (col. 1, line 48-57). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to use a fiber for redirecting broadband beam for the purpose of directing reflected light beam to a particular detector which independently measure different wavelengths.

Claims 6 and 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brill et al. (2006/0001883).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over of Brill, as applied to claim 1. The reference of Brill teaches of the features of claim 1, comprising first focal length of said parabolic mirror (508) in said first component pair and second focal length of said parabolic mirror (510) in said second component pair, however the reference of Brill is silent regarding the sizes/dimension of the focal length of the parabolic mirrors because there is no reason for the size/dimensions to be same since they are independent of each other. Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to provide a set of parabolic mirror with different focal length for the purpose of providing deflection and focusing of incident beam accurately.

As to claim 15, the reference of Brill discloses the claimed invention except for is silent with regard to the changes in the beam diameter, however it has been held that the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to provide a broadband beam that has a diameter of greater than 500 μm at light source and a diameter lying in a range between 50 and 80 μm when illuminated onto a top surface of a sample for the purpose of providing a more accurate measurement. (see In re Aller, 105 USPQ 233).

Claims 14, 16 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brill et al. (2006/0001883) in view of Brierley (5,106,196).

Claims 14 and 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over of Brill in view of Brierley, as applied to claim 1. The reference of Brill teaches of the features of claims 14 and 26, comprising light source, however the reference of Brill is silent regarding the wavelengths lying in a range between 190 and 1100 nm. The reference of Brierley teaches of a beam with wavelengths lying in a range between 190 and 1100 nm (col. 7, line 9-12). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to use beam with wavelengths lying in a range between 190 and 1100 nm for the purpose of maintaining the focus and the angle onto the sample.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over of Brill in view of Brierley, as applied to claim 1. The reference of Brill teaches of the features of claim 16, comprising displacing a component (512)(page 3, par. 0040), however the reference of Brill is silent regarding the displacing said second component pair while maintaining relative position of said parabolic mirror and said planar mirror such that distance from said parabolic mirror and a top surface of said sample is such that said broadband beam is focused. The reference of Brierley teaches of vertically adjustable precision guideways (col. 5, line 52-col. 7, line21) that optically perform equivalent function of maintaining relative position of said parabolic mirror and said planar mirror such that distance from said parabolic mirror and a top surface of said sample is such that said broadband beam is focused by minimum component adjustment. Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to move

mirror and parabolic mirror for the purpose of maintaining the focus and the angle onto the sample.

Claims 18-22, 24 and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brill et al. (2006/0001883) in view of Brierley (5,106,196), further in view of Norton (5,917,594).

As to claims 18, 19, 22, 32, 33 and 34, the reference of Brill and Brierley discloses everything claimed, as applied to claims 1 and 21 above, however the reference of Brill and Brierley is silent regarding a third light path. The reference of Norton teaches of a third light path by using transmitted sample (figs. 1 and 2)(col. 6, line 39-51)(page 1, par. 0002) (page 3, par. 0040). It would have been obvious to one having ordinary skill in the art at the time of invention to provide a third light path for the purpose of detecting radiation that is transmitted through the sample, further it would have been obvious to one having ordinary skill in the art at the time of invention to provide similar detecting elements including polarizing means in the said second detector for the purpose of detecting the third light path.

As to claim 20, Brill, Brierley and Norton discloses everything claimed, as applied to claim 18 above, in addition Brill discloses wherein said element is a first detector (104/804).

As to claim 21, Brill, Brierley and Norton discloses everything claimed, as applied to claim 18 above, in addition Norton discloses wherein said element is a second detector (42').

As to claim 24, Brill, Brierley and Norton discloses everything claimed, as applied to claim 21 above, in addition Brill discloses wherein said second detector is a spectroscopic ellipsometer (page 3, par. 0049).

### Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art method/apparatus for characterizing optical properties of a sample that may anticipate or obviate the claims of the applicant's invention.

### *Conclusion*

## Official Notice

Several facts have been relied upon from the personal knowledge of the examiner about which the examiner took Official Notice. Applicant must seasonably challenge well known statements and statements based on personal knowledge. In re Selmi, 156 F.2d 96, 70 USPQ 197 (CCPA 1946); In re Fischer, 125 F.2d 725, 52 USPQ 473 (CCPA 1942). See also In re Boon, 439 F.2d 724, 169 USPQ 231 (CCPA 1971) (a challenge to the taking of judicial notice must contain adequate information or argument to create on its face a reasonable doubt regarding the circumstances justifying the judicial notice). If applicant does not seasonably traverse the well-known statement during examination, then the object of the well-known statement is taken to be admitted prior art. In re Chevenard, 139 F.2d 71, 60 USPQ 239 (CCPA 1943). A seasonable challenge constitutes a demand for evidence made as soon as practicable during prosecution. Thus, applicant is charged with rebutting the well-known statement in the next reply after the Office action in which the well-known statement was made. See MPEP 2144.03, paragraphs 4 and 6.

## Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi
March 7, 2006

HWA (ANDREW) LEE
PRIMARY EXAMINER